Hearing effects of prolonged exposure to the hyperbaric environment in professional divers

S. T, Aguilera[1,2], M, Serrano[1]

[*1]*Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School*, Audiologia *e Audiologa Clínica Templado – Audiología Avanzada (Murcia/España)*
Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Audiologia
sheilatemplado.audiologia@gmail.com

Background, Professional divers are exposed to major changes in atmospheric pressure. The structures of the whole ear are subjected to strong pressure. The middle ear needs to compensate for this pressure to maintain isobaric balance through the correct functioning of the Eustachian tube.
Objectives, The objectives of this study were to verify the effect of continuous exposure to the hyperbaric environment in the ear, and consequently the hearing, through an audiological study before and after the frequency of a diving course and to verify if it is possible to detect early lesions in the auditory system due to the hyperbaric environment in order to minimize its consequences.
Material and methods, Tympanogram, acoustic reflexes, simple tonal audiogram and otoemissions by distortion products (OEAPD) were carried out on 15 students of the Diving School of the Spanish Armada. The examinations were carried out before and after the frequency of the diving course. The students included in the study had no prior exposure to the hyperbaric environment or otologic background.
Results, The participants reported that during the course they felt otalgia (53.33%), tinnitus (20%), nausea and imbalance (20%). At the end of the course, the thresholds of stapedic reflexes and auditory thresholds were higher than at the beginning of the course, with statistically significant differences. There were no changes in the tympanogram or in the DPOAE.
Conclusion, Given the results of this study, it can be stated that the hyperbaric environment produces changes in the auditory system since the first exposures. Conducting audiological examinations from the start of the exposure can help prevent serious damage to the auditory system.

Keywords: hyperbaric medicine; divers; barotrauma; OEAPD; auditory thresholds; impedanticiometry